

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

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Listing of Claims:

1. (currently amended) A magnetic head having a magnetoresistive film comprising an anti-ferromagnetic layer, a ~~ferromagnetic-pinned~~ ferromagnetic pinned layer, a non-magnetic intermediate layer, a soft magnetic free layer, a non-magnetic and oxidized conductive film, and an oxide layer of metal selected from Ta, Nb, Ti, Hf, W or an alloy thereof laminated in this order on a substrate.

Claim 2 (canceled)

3. (currently amended) A magnetic head as defined in claim 1, wherein the thickness of the metal oxide layer is 1.0 ~~nm~~ nm or less.

4. (currently amended) A magnetic head as defined in claim 1, wherein ~~the~~ an intermediate layer coupling field showing ~~the~~ a magnitude of the ferromagnetic coupling between the ferromagnetic pinned layer and the soft magnetic free layer is substantially zero.

Claim 5 (canceled)

6. (currently amended) A magnetic head as defined in claim 3, wherein ~~the~~ an intermediate layer coupling field showing ~~the~~ a magnitude of the ferromagnetic coupling between the ferromagnetic pinned layer and the soft magnetic free layer is substantially zero.

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7. (previously presented) A magnetic head as defined in claim 4, wherein the thickness of the metal oxide layer is 1.0 nm or less.

8. (currently amended) A magnetic recording apparatus including a magnetic recording medium for recording information, a magnetic head having a magnetoresistive film comprising an anti-ferromagnetic layer, a ferromagnetic pinned layer, a non-magnetic intermediate layer, a soft magnetic free layer, a non-magnetic and oxidized conductive film, and an oxide layer of metal selected from Ta, Nb, Ti, Hf, W or an alloy thereof laminated in this order on a substrate, a head slider for holding the magnetic head, an actuator for guiding the head slider to a predetermined recording position ~~of the recording position~~ on the recording medium, a spindle motor rotating the recording medium and a signal processing system for processing information read out of the magnetic recording medium.

9. (currently amended) A magnetic head as defined in claim 1, wherein the non-magnetic and oxidized conductive film is a non-magnetic and conductive oxidized stopper layer which substantially prevents at least one of diffusion of oxygen from the metal oxide layer which is an oxide protective layer and propagation of stresses caused by oxides with respect to the soft magnetic free layer and degradation of a soft magnetic characteristic of the soft magnetic free layer.

10. (currently amended) A magnetic recording apparatus as defined in claim 8, wherein the non-magnetic and oxidized conductive film is a non-magnetic conductive oxidized stopper layer which substantially prevents at least one of diffusion of oxygen from the metal oxide layer which is an oxide protective layer and

propagation of stresses caused by oxides with respect to the soft magnetic free layer and degradation of a soft magnetic characteristic of the soft magnetic free layer.

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11. (new) A magnetic head as defined in claim 1, wherein the non-magnetic and oxidized conductive film has a thickness so that an intermediate layer coupling field showing a magnitude of ferromagnetic coupling between the ferromagnetic pinned layer and the soft magnetic free layer is substantially zero.

12. (new) A magnetic head as defined in claim 11, wherein the thickness of the non-magnetic and oxidized conductive film enables a change of resistance (ΔR) to be maximized.

13. (new) A magnetic recording apparatus as defined in claim 8, wherein the non-magnetic and oxidized conductive film has a thickness so that an intermediate layer coupling field showing a magnitude of ferromagnetic coupling between the ferromagnetic pinned layer and the soft magnetic free layer is substantially zero.

14. (new) A magnetic recording apparatus as defined in claim 13, wherein the thickness of the non-magnetic and oxidized conductive film enables a change of resistance (ΔR) to be maximized.
